WHAT IS CLAIMED IS:

1. A medical implant or medical implant part comprising a body and a surface layer, wherein the surface layer comprises a mixture comprising at least one hydrophilic polymer having a melt index of about 0.5 g/10 min or less and ultrahigh molecular weight polyethylene having a weight average molecular weight of about 400,000 atomic mass units or more.

2. The medical implant or medical implant part of claim 1, wherein the ultrahigh molecular weight polyethylene has a weight average molecular weight of about 1,000,000 atomic mass units or more.

3. The medical implant or medical implant part of claim 1, wherein at least a portion of the hydrophilic polymer is covalently bonded to at least a portion of the ultrahigh molecular weight polyethylene.

4. The medical implant or medical implant part of claim 1, wherein the hydrophilic polymer is a water-soluble, biocompatible polymer.

5. The medical implant or medical implant part of claim 4, wherein the hydrophilic polymer is a water-soluble, biocompatible polymer selected from the group consisting of poly(ethylene oxide), polyvinylpyrrolidone, poly(vinyl alcohol), mixtures thereof, and copolymers thereof.

6. The medical implant or medical implant part of claim 4, wherein the hydrophilic polymer comprises about 0.1 to about 25 wt.% of the mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene.

7. The medical implant or medical implant part of claim 1, wherein the surface layer has a thickness of about 1 mm or more.

8. The medical implant or medical implant part of claim 1, wherein the body comprises ultrahigh molecular weight polyethylene.

9. The medical implant or medical implant part of claim 1, wherein the body is composed of the same materials as the surface layer.

10. The medical implant or medical implant part of claim 1, wherein the surface layer corresponds to an articulating surface of the medical implant or medical implant part.

11. A method for producing a medical implant or medical implant part comprising a body and a surface layer, the method comprising the steps of:

(a) providing a compression mold for the medical implant or medical implant part having an internal volume,

(b) providing a matrix of ultrahigh molecular weight polyethylene, wherein the ultrahigh molecular weight polyethylene has a weight average molecular weight of about 400,000 atomic mass units or more,

(c) dispersing at least one hydrophilic polymer in the matrix of ultrahigh molecular weight polyethylene to produce a mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene,

(d) filling at least a portion of the internal volume of the compression mold with the mixture obtained in step (c),

(e) compressing the mixture contained within the compression mold for a time and under conditions sufficient to form a medical implant or medical implant part therefrom, and

(f) removing the medical implant or medical implant part from the compression mold.

12. The method of claim 11, wherein the portion of the internal volume of the compression mold filled with the mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene comprises a portion of the surface layer of the medical implant or medical implant part, and the surface layer corresponds to an articulating surface of the medical implant or medical implant part.

13. The method of claim 12, wherein the surface layer has a thickness of about 1 mm or more.

14. The method of claim 13, wherein the portion of the internal volume of the compression mold corresponding to the body of the medical implant or medical implant part is filled with ultrahigh molecular weight polyethylene.

15. The method of claim 11, wherein substantially all of the internal volume of the compression mold is filled with the mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene.

16. The method of claim 11, wherein the method further comprises:

(g) irradiating at least a portion of the mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene for a time and under

conditions sufficient to cross-link at least a portion of the hydrophilic polymer and ultrahigh molecular weight polyethylene contained therein.

17. The method of claim 16, wherein the method further comprises:

(h) quenching a substantial portion of free radicals generated in the mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene during the irradiation of the mixture in step (g).

18. The method of claim 17, wherein the method further comprises:

(i) sterilizing the medical implant or medical implant part using a non-irradiative process, and

(j) packaging the medical implant or medical implant part.

19. The method of claim 11, wherein the ultrahigh molecular weight polyethylene has a weight average molecular weight of about 1,000,000 atomic mass units or more.

20. The method of claim 11, wherein the hydrophilic polymer is a water-soluble, biocompatible polymer.

21. The method of claim 20, wherein the hydrophilic polymer is a water-soluble, biocompatible polymer selected from the group consisting of poly(ethylene oxide), polyvinylpyrrolidone, poly(vinyl alcohol), mixtures thereof, and copolymers thereof.

22. The method of claim 11, wherein the hydrophilic polymer comprises about 0.1 to about 25 wt.% of the mixture comprising at least one hydrophilic polymer and ultrahigh molecular weight polyethylene.